in accordance with part 17 of this chapter. In the event of default by the owner, each licensee or permittee shall be individually responsible for conforming to the requirements pertaining to antenna structure painting and lighting.

s 80.111 Radiotelephone operating procedures for coast stations.

This section applies to all coast stations using telephony which are subject to this part.

(a)

(a) Limitations on calling.

(a) (1)

(1) Except when transmitting a general call to all stations for announcing or preceding the transmission of distress, urgency, or safety messages, a coast station must call the particular station(s) with which it intends to communicate.

(a) (2)

(2) Coast stations must call ship stations by voice unless it is known that the particular ship station may be contacted by other means such as automatic actuation of a selective ringing or calling device.

(a) (3)

(3) Coast stations may be authorized emission for selective calling on each working frequency.

(a) (4)

(4) Calling a particular station must not continue for more than one minute in each instance. If the called station does not reply, that station must not again be called for two minutes. When a called station does not reply to a call sent three times at intervals of two minutes, the calling must cease for fifteen minutes. However, if harmful interference will not be caused to other communications in progress, the call may be repeated after three minutes.

(a) (5)

(5) A coast station must not attempt to communicate with a ship station that has specifically called another coast station until it becomes evident that the called station does not answer, or that communication between the ship station and the called station cannot be carried on because of unsatisfactory operating conditions.

(a) (6)

(6) Calls to establish communication must be initiated on an available common working frequency when such a frequency exists and it is known that the called ship maintains a simultaneous watch on the common working frequency and the appropriate calling frequency(ies).

(b)

(b) Time limitation on calling frequency. Transmissions by coast stations on 2182 kHz or 156.800 MHz must be minimized and any one exchange of communications must not exceed one minute in duration.

(c)

(c) Change to working frequency. After establishing communications with another station by call and reply on 2182 kHz or 156.800 MHz coast stations must change to an authorized working channel for the transmission of messages.

(d)

(d) Use of busy signal. A coast station, when communicating with a ship station which transmits to the coast station on a radio channel which is a different channel from that used by the coast station for transmission, may transmit a "busy" signal whenever transmission from the ship station is being received. The characteristics of the "busy" signal are contained in s 80.74.

s 80.114 Authority of the master.

(a)
(a) The service of each ship station must at all times be under the ultimate control of the master, who must require that each operator or such station comply with the Radio Regulations in force and that the ship station is used in accordance with those regulations.
(b)
(b) These rules are waived when the vessel is under the control of the U.S. Government.

s 80.115 Operational conditions for use of associated ship units.

(a)
(a) Associated ship units may be operated under a ship station authorization. Use of an associated ship unit is restricted as follows;
(a) (1)
(1) It must only be operated on the safety and calling frequency 156.800 MHz or on commercial or noncommercial VHF intership frequencies appropriate to the class of ship station with which it is associated.
(a) (2)
(2) Except for safety purposes, it must only be used to communicate with the ship station with which it is associated or with associated ship units of the same ship station. Such associated ship units may not be used from shore.
(a) (3)
(3) It must be equipped to transmit on the frequency 156.800 MHz and at least one appropriate intership frequency.
(a) (4)
(4) Calling must occur on the frequency 156.800 MHz unless calling and working on an intership frequency has been prearranged.
(a) (5)
(5) Power is limited to one watt.
(a) (6)
(6) The station must be identified by the call sign of the ship station with which it is associated and an appropriate unit designator.
(b)
(b) State or local government vehicles used to tow vessels involved in search and rescue operations are authorized to operate on maritime mobile frequencies as associated ship units. Such operations must be in accordance with paragraph (a) of this section except that the associated ship unit: may be operated from shore; may use Distress, Safety and Calling, Intership Safety, Liaison, U.S. Coast Guard, or Maritime Control VHF intership frequencies; and may have a transmitter power of 25 watts.

s 80.116 Radiotelephone operating procedures for ship stations.

(a)
(a) Calling coast stations.
(a) (1)
(1) Use by ship stations of the frequency 2182 kHz for calling coast stations and for replying to calls from coast stations is authorized. However, such calls and replies should be on the appropriate ship-shore working frequency.
(a) (2)

(2) Use by ship stations and marine utility stations of the frequency 156.800 MHz for calling coast stations and marine utility stations on shore, and for replying to calls from such stations, is authorized. However, such calls and replies should be made on the appropriate ship-shore working frequency.

(b)

(b) Calling ship stations.

(b) (1)

(1) Except when other operating procedure is used to expedite safety communication, ship stations, before transmitting on the intership working frequencies 2003, 2142, 2638, 2738, or 2830 kHz, must first establish communications with other ship stations by call and reply on 2182 kHz. Calls may be initiated on an intership working frequency when it is known that the called vessel maintains a simultaneous watch on the working frequency and on 2182 kHz.

(b) (2)

(2) Except when other operating procedures are used to expedite safety communications, the frequency 156.800 MHz must be used for call and reply by ship stations and marine utility stations before establishing communication on one of the intership working frequencies. Calls may be initiated on an intership working frequency when it is known that the called vessel maintains a simultaneous watch on the working frequency and on 156.800 MHz.

(c)

(c) Change to working frequency. After establishing communication with another station by call and reply on 2182 kHz or 156.800 MHz stations on board ship must change to an authorized working frequency for the transmission of messages.

(d)

(d) Limitations on calling. Calling a particular station must not continue for more than 30 seconds in each instance. If the called station does not reply, the station must not again be called until after an interval of 2 minutes. When a called station called does not reply to a call sent three times at intervals of 2 minutes, the calling must cease and must not be renewed until after an interval of 15 minutes; however, if there is no reason to believe that harmful interference will be caused to other communications in progress, the call sent three times at intervals of 2 minutes may be repeated after a pause of not less than 3 minutes. In event of an emergency involving safety, the provisions of this paragraph do not apply.

(e)

(e) Limitations on working. Any one exchange of communications between any two ship stations on 2003, 2142, 2638, 2738, or 2830 kHz or between a ship station and a private coast station on 2738 or 2830 kHz must not exceed 3 minutes after the stations have established contact. Subsequent to such exchange of communications, the same two stations must not again use 2003, 2142, 2638, 2738, or 2830 kHz for communication with each other until 10 minutes have elapsed.

(f)

(f) Transmission limitation on 2182 kHz and 156.800 MHz. To facilitate the reception of distress calls, all transmissions on 2182 kHz and 156.800 MHz (channel 16) must be minimized and transmissions on 156.800 MHz must not exceed 1 minute.

(g)

(g) Limitations on commercial communication. On frequencies in the band 156-162 MHz, the exchange of commercial communication must be limited to the minimum practicable transmission time. In the conduct of ship-shore communication other than distress, stations on board ship must comply with instructions given by the private coast station or marine utility station on shore with which they are communicating.

(h)

(h) 2182 kHz silence periods. To facilitate the reception of distress calls, transmission by ship or survival craft stations is prohibited on any frequency (including 2182 kHz) within the band 2173.5-2190.5 kHz during each 2182 kHz silence period.

s 80.121 Public coast stations using telegraphy.

(a)
(a) Narrow-band direct-printing (NB-DP) operating procedures.
(a) (1)
(1) When both terminals of the NB-DP circuit are satisfied that the circuit is in operable condition, the message preamble must be transmitted in the following format:
(a) (1) (i)
(i) One carriage return and one line feed,
(a) (1) (ii)
(ii) Serial number or number of the message,
(a) (1) (iii)
(iii) The name of the office of origin,
(a) (1) (iv)
(iv) The number of words,
(a) (1) (v)
(v) The date of handing in of the message,
(a) (1) (vi)
(vi) The time of handing in of the message, and
(a) (1) (vii)
(vii) Any service instructions. (See The ITU "Manual for Use by the Maritime Mobile and Maritime Mobile-Satellite Services".)
(a) (2)
(2) Upon completion of transmission of the preamble, the address, and signature must be transmitted as received from the sender.
(a) (3)
(3) Upon completion of transmission of the signature the coast station must, following the signal "COL", routinely repeat all service indications in the address and for figures or mixed groups of letters, figures or signs in the address, or signature.
(a) (4)
(4) In telegrams of more than 50 words, routine repetition must be given at the end of each page.
(a) (5)
(5) Paragraphs (a) (1) through (4) of this section need not be followed when a direct connection is employed.
(a) (6)
(6) In calling ship stations by narrow-band direct-printing, the coast station must use the ship station selective calling number (5 digits) and its assigned coast station identification number (4 digits). Calls to ship stations must employ the following format: Ship station selective call number, repeated twice; "DE", sent once; and coast station identification number, repeated twice. When the ship station does not reply to a call sent three times at intervals of two minutes, the calling must cease and must not be renewed until after an interval of fifteen minutes.
(a) (7)
(7) A public coast station authorized to use NB-DP frequencies between 4000 kHz and 27500 kHz may use class A1A emission on the "mark" frequency for station identification and for establishing communications with ship stations. The radio

station license must reflect authority for this type of operation, and harmful interference must not be caused.

(b)

(b) Watch on ship calling frequencies.

(b) (1)

(1) Public coast stations using telegraphy must maintain a continuous watch during their working hours for calls from ship stations on frequencies in the same band(s) in which the coast station is licensed to operate. See Subpart H of this part.

(b) (2)

(2) Such station must employ receivers which are capable of being accurately set to any designated calling frequency in each band for which the receiver is intended to operate. The time required to set the receiver to a frequency must not exceed five seconds. The receiver must have a long term frequency stability of not more than 50 Hz and a minimum sensitivity of two microvolts across receiver input terminals of 50 ohms, or equivalent. The audio harmonic distortion must not exceed five percent at any rated output power.

(c)

~~(c) Radiotelegraph frequencies. Radiotelegraph frequencies available for assignment to public coast stations are contained in Subpart H of this part~~.

s 80.122 Public coast stations using facsimile and data.

Facsimile operations are a form of telegraphy for the transmission and receipt of fixed images between authorized coast and ship stations. Facsimile and data techniques may be implemented in accordance with the following paragraphs.

(a)

(a) Supplemental Eligibility Requirements. Public coast stations are eligible to use facsimile and data techniques with ship stations.

(b)

(b) Assignment and use of frequencies.

(b) (1)

(1) Frequencies in the 2000-27500 kHz bands in part 2 of the Commission's rules as available for shared use by the maritime mobile service and other radio services are assignable to public coast stations for providing facsimile communications with ship stations. Additionally, frequencies in the 156-162 MHz band available for assignment to public coast stations for radiotelephone communications that are contained in subpart H of this part are also available for facsimile and data communications.

(b) (2)

(2) Equipment used for facsimile and data operations is subject to the applicable provisions of subpart E of this part.

(b) (3)

(3) The use of voice on frequencies authorized for facsimile operations in the bands 2000-27500 kHz listed in subpart H of this part is limited to setup and confirmation of receipt of facsimile transmissions.

s 80.123 Service to stations on land.

Marine VHF public coast stations, including AMTS coast stations, may provide public correspondence service to stations on land in accordance with the following:

(a)

(a) The public coast station licensee must provide each associated land station with a letter, which shall be presented to authorized FCC representatives upon request, acknowledging that the land station may operate under the authority of the associated public coast station's license:

(b)

(b) Each public coast station serving stations on land must afford priority to marine-originating communications through any appropriate electrical or mechanical means.

(c)

(c) Land station identification shall consist of the associated public coast station's call sign, followed by a unique numeric or alphabetic unit identifier;

(d)

(d) Radio equipment used on land must be type accepted for use under part 22, part 80, or part 90 of this chapter. Such equipment must operate only on the public correspondence channels authorized for use by the associated public coast station;

(e)

(e) Transmitter power shall be in accordance with the limits set in s 80.215 for ship stations and antenna height shall be limited to 6.1 meters (20 feet) above ground level;

(f)

(f) Land stations may only communicate with public coast stations and must remain within radio range of associated public coast stations; and,

(g)

(g) The land station must cease operation immediately upon written notice by the Commission to the associated public coast station that the land station is causing harmful interference to marine communications.

s 80.131 Radioprinter operations.

Radioprinter operations provide a relatively low cost system of record communications between authorized coast and ship stations in accordance with the following paragraphs.

(a)

(a) Supplementary eligibility requirement. A radioprinter authorization for a private coast station may be issued to the owner or operator of a ship of less than 1600 gross tons, a community of ships all of which are less than 1600 gross tons, or an association whose members operate ships of less than 1600 gross tons.

(b)

(b) Scope of communications. Only those communications which concern the business and operational needs of vessels are authorized.

(c)

(c) Assignment and use of frequencies.

(c) (1)

(1) Frequencies may be assigned to private coast stations for radioprinter use from the appropriate bands listed in Subpart H of this part.

(c) (2)

(2) Frequencies in the listed bands are shared with other radio services including the maritime mobile service. Each assigned frequency is available on a shared use basis only, not for the exclusive use of any one station or licensee.

(d)

(d) Coast station responsibilities.

(d) (1)
(1) Private coast stations must propose frequencies and provide the names of ships to be served with the application.
(d) (2)
(2) Private coast station licensees must provide copies of their license to all ships with which they are authorized to conduct radioprinter operations.

s 80.133 Private coast stations using facsimile in Alaska.

Facsimile techniques may be implemented in accordance with the following paragraphs.
(a)
(a) Private coast stations in Alaska are eligible to use facsimile techniques with associated ship stations and other private coast stations in accordance with s 80.505(b).
(b)
(b) The frequency 156.425 MHz is assigned by rule to private coast stations in Alaska for facsimile transmissions.
(c)
(c) Equipment used for facsimile operations is subject to the applicable provisions of subpart E of this part.

s 80.141 General provisions for ship stations.

(a)
(a) Points of communication. Ship stations and marine utility stations on board ships are authorized to communicate with any station in the maritime mobile service.
(b)
(b) Service requirements for all ship stations.
(b) (1)
(1) Each ship station must receive and acknowledge all communications which are addressed to the ship or to any person on board.
(b) (2)
(2) Every ship, on meeting with any direct danger to the navigation of other ships such as ice, a derelict vessel, a tropical storm, subfreezing air temperatures associated with gale force winds causing severe icing on superstructures, or winds of force 10 or above on the Beaufort scale for which no storm warning has been received, must transmit related information to ships in the vicinity and to the authorities on land unless such action has already been taken by another station. All such radio messages must be preceded by the safety signal.
(b) (3)
(3) A ship station may accept communications for retransmission to any other station in the maritime mobile service. Whenever such messages or communications have been received and acknowledged by a ship station for this purpose, that station must retransmit the message as soon as possible.
(c)
(c) Service requirements for vessels. Each ship station provided for compliance with Part II of Title III of the Communications Act must provide a public correspondence service on voyages of more than 24 hours for any person who requests the service.
(c) (1)

(1) ~~Compulsory radiotelegraph ships must provide this service during the hours the radio operator is normally on duty~~.

(c) (2)

(2) Compulsory radiotelephone ships must provide this service for at least four hours daily. The hours must be prominently posted at the principal operating location of the station.

(d)

(d) Operating conditions. Effective August 1, 1994, VHF hand-held, portable transmitters used while connected to an external power source or a ship antenna must be equipped with an automatic timing device that deactivates the transmitter and reverts the transmitter to the receive mode after an uninterrupted transmission period of five minutes, plus or minus 10 percent. Additionally, such transmitters must have a device that indicates when the automatic timer has deactivated the transmitter. See also s 80.203(c).

s 80.142 Ships using radiotelegraphy.

(a)

(a) Calling by narrow-band direct-printing.

(a) (1)

(1) NB-DP ship stations must call United States public coast stations on frequencies designated for NB-DP operation.

(a) (2)

(2) Where it is known that the coast station maintains a watch on working frequencies for ship station NB-DP calls the ship station must make its initial NB-DP call on those frequencies.

(a) (3)

(3) Calls to a coast station or other ship station must employ the following format: Coast station identification number, repeated twice; "DE", sent once; and ship station selective call number, repeated twice. When the coast station does not reply to a call sent three times at intervals of two minutes, the calling must cease for fifteen minutes.

(b)

(b) NB-DP operating procedure. The operation of NB-DP equipment in the maritime mobile service must be in accordance with the operating procedures contained in the latest version of CCIR Recommendation 492 that does not prevent the use of existing equipment.

(c)

(c) ~~Required channels for radiotelegraphy.~~

(c) (1)

(1) ~~Each ship station using telegraphy on frequencies within the band 405-525 kHz must be capable of:~~

(c) (1) (i)

(i) ~~Transmit and receive on 500 kHz using the authorized emissions, and~~

(c) (1) (ii)

(ii) ~~Transmit on at least two working frequencies and receive on all other frequencies necessary for their service using authorized emissions, and~~

(c) (1) (iii)

(iii) ~~When a radiotelegraph installation is compulsory, a fourth frequency within this band which is authorized specifically for direction finding must also be provided.~~

(c) (2)

(2) ~~Each ship station using telegraphy on frequencies within the band 90-160 kHz must be capable of transmitting and receiving class A1A emission on the frequency 143 kHz, and on at least two additional working frequencies within this band except that portion between 140 kHz and 146 kHz~~.

(c) (3)

(3) Each ship station using telegraphy and operating in the bands between 4000-27500 kHz must be capable of transmitting and receiving class ~~A1A or~~ J2A emission on at least one frequency authorized for calling and at least two frequencies authorized for working in each of the bands for which facilities are provided to carry on its service.

(c) (4)

(4) Each ship station using telegraphy in Region 2 on frequencies within the band 2065-2107 kHz must be capable of transmitting and receiving class ~~A1A or~~ J2A emission on at least one frequency in this band authorized for working in addition to a frequency in this hand authorized for calling.

s 80.143 Required frequencies for radiotelephony.

(a)

(a) Except for compulsory vessels, each ship radiotelephone station licensed to operate in the band 1605-3500 kHz must be able to receive and transmit J3E emission on the frequency 2182 kHz. Ship stations are additionally authorized to receive and transmit H3E emission for communications with foreign coast stations and with vessels of foreign registry. If the station is used for other than safety communications, it must be capable also of receiving and transmitting the J3E emission on at least two other frequencies in that band. However, ship stations which operate exclusively on the Mississippi River and its connecting waterways, and on high frequency bands above 3500 kHz, need be equipped with 2182 kHz and one other frequency within the band 1605-3500 kHz. ~~Additionally, use of A3E emission is permitted for distress and safety purposes on 2182 kHz for portable survival craft equipment also having the capability to operate on 500 kHz and for transmitters authorized for use prior to January 1, 1972~~.

(b)

(b) Except as provided in paragraph (c) of this section, at least one VHF radiotelephone transmitter/receiver must be able to transmit and receive on the following frequencies:

(b) (1)

(1) The distress, safety and calling frequency 156.800 MHz;

(b) (2)

(2) The primary intership safety frequency 156.300 MHz;

(b) (3)

(3) One or more working frequencies; and

(b) (4)

(4) All other frequencies necessary for its service.

(c)

(c) Where a ship ordinarily has no requirement for VHF communications, handheld VHF equipment may be used solely to comply with the bridge-to-bridge navigational communication requirements contained in Subpart U of this part.

~~**s 80.145 Class C EPIRB operational procedures.**~~

~~Class C EPIRBs must be used for distress purposes only after use of the VHF/FM radiotelephone installation, in accordance with s 80.320, has proved unsuccessful or when a VHF/FM radiotelephone installation is not fitted, or when specifically requested to do so by a station engaged in search and rescue operations~~.

~~**s 80.146 Watch on 500 kHz.**~~

~~During their hours of service, ship stations using frequencies in the authorized bands between 405-525 kHz must, remain on watch on 500 kHz except when the operator is transmitting on 500 kHz or operating on another frequency. The provisions of this section do not relieve the ship from complying with the requirements for a safety watch as prescribed in s 80.304 and s 80.305.~~

s 80.147 Watch on 2182 kHz.

Ship stations must maintain a watch on 2182 kHz as prescribed by s s 80.304(b).

s 80.148 Watch on 156.8 MHz (channel 16).

At least one VHF ship station per compulsory vessel while underway must maintain a watch on 156.800 MHz whenever such station is not being used for exchanging communications. The watch is not required:

(a)

(a) Where a ship station is operating only with handheld bridge-to-bridge VHF radio equipment under s 80.143(c) of this part;

(b)

(b) For vessels subject to the Bridge-to-Bridge Act and participating in a Vessel Traffic Service (VTS) system when the watch is maintained on both the bridge-to-bridge frequency and a separately assigned VTS frequency; or

(c)

(c) For a station on board a voluntary vessel equipped with digital selective calling (DSC) equipment, maintaining a continuous DSC watch on 156.525 MHz whenever such station is not being used for exchanging communications, and while such station is within the VHF service area of a U.S. Coast Guard radio facility which is DSC equipped.

s 80.149 Answer to notice of violation.

(a)

(a) Any person receiving official notice of violation of the terms of the Communications Act, any legislative act, executive order, treaty to which the United States is a party, terms of a station or operator license, or the rules and regulations of the Federal Communications Commission must within 10 days from such receipt, send a written answer, in duplicate, to the office of the Commission originating the official notice. If an answer cannot be sent or an acknowledgment made within such 10-day period by reason of illness or other unavoidable circumstances, acknowledgment and answer must be made at the earliest practicable date with a satisfactory explanation of the delay. The answer to each notice must be complete in itself and must not be abbreviated by references to other communications or answers to other notices. The answer must contain a full explanation of the incident involved and must set forth the action taken to prevent a continuation or recurrence. If the notice relates to

lack of attention to or improper operation of the station or to log or watch discrepancies, the answer must give the name and license number of the licensed operator on duty.

(b)

(b) When an official notice of violation, impending violation, or discrepancy, pertaining to any provision of Part II of Title III of the Communications Act or the radio provisions of the Safety Convention, is served upon the master or person responsible for a vessel and any instructions appearing on such document issued by a representative of the Commission are at variance with the content of paragraph (a) of this section, the instructions issued by the Commission's representative supersede those set forth in paragraph (a) of this section.

s 80.151 Classification of operator licenses and endorsements.

(a)

(a) Commercial radio operator licenses issued by the Commission are classified in accordance with the Radio Regulations of the International Telecommunication Union.

(b)

(b) The following licenses are issued by the Commission. International classification, if different from the license name, is given in parentheses. The licenses and their alphanumeric designator are listed in descending order.

(b) (1)

(1) ~~T-1. First Class Radiotelegraph Operator's Certificate.~~

(b) (2)

(2) ~~T-2. Second Class Radiotelegraph Operator's Certificate~~.

(b) (3)

(3) G. General Radiotelephone Operator License (radiotelephone operator's general certificate).

(b) (4)

(4) ~~T-3. Third Class Radiotelegraph Operator's Certificate (radiotelegraph operator's special certificate~~).

(b) (5)

(5) MP. Marine Radio Operator Permit (radiotelephone operator's restricted certificate).

(b) (6)

(6) RP. Restricted Radiotelephone Operator Permit (radiotelephone operator's restricted certificate).

(c)

(c) The following license endorsements are affixed by the Commission to provide special authorizations or restrictions.
Applicable licenses are given in parentheses.

(c) (1)

(1) Ship Radar endorsement (~~First and Second Class Radiotelegraph Operator's Certificate~~, General Radiotelephone Operator License).

(c) (2)

(2) ~~Six Months Service endorsement (First and Second Class Radiotelegraph Operator's Certificate)~~.

(c) (3)

(3) Restrictive endorsements; relating to physical handicaps, English language or literacy waivers, or other matters (all licenses).

s 80.153 Coast station operator requirements.

(a)
(a) Except as provided in s 80.179, operation of a coast station transmitter must be performed by a person holding a commercial radio operator license of the required class, who is on duty at the control point of the station. The operator is responsible for the proper operation of the station.
(b)
(b) The minimum class of radio operator license required for operation of each specific classification of station is set forth below:

Minimum Operator License

~~Public coast telegraph, all classes--T-2~~.

~~--Manual Morse under supervision of T1 or T2--T-3~~.

--NB-DP under supervision of ~~T1 or T2--T-3~~, G or MP.

Coast telephone, all classes--None.
(c)
(c) Special Operating Conditions:
(c) (1)
(1) ~~When a coast telephone station of any class is used to transmit manual telegraphy the telegraph key operator must hold a third-class or higher radiotelegraph operator's license.~~
(c) (2)
(2) An operational fixed station associated with a coast station may be operated by the operator of the associated coast station.

s 80.155 Ship station operator requirements.

Except as provided in ss 80.177 and 80.179, operation of transmitters of any ship station must be performed by a person holding a commercial radio operator license or permit of the class required below. The operator is responsible for the proper operation of the station.

s 80.156 Control by Operator.

The operator on board ships required to have a holder of a commercial operator license or permit on board may, if authorized by the station licensee or master, permit an unlicensed person to modulate the transmitting apparatus for all modes of communication except Morse code radiotelegraphy.

~~s 80.157 Radio officer defined~~.

~~A "radio officer" means a person holding a first or second class radiotelegraph operator's certificate issued by the Commission who is employed to operate a ship radio station in compliance with Part II of Title III of the Communications~~

~~Act. Such a person is also required to be licensed as a "radio officer" by the U.S. Coast Guard when employed to operate a ship radiotelegraph station~~.

s 80.159 Operator requirements of Title III of the Communications Act and the Safety Convention.

(a)

(a) ~~Each telegraphy passenger ship equipped with a radiotelegraph station in accordance with Part II of Title III of the Communications Act must carry one radio officer holding a first or second class radiotelegraph operator's certificate and a second radio officer holding either a first or second class radiotelegraph operator's certificate. The holder of a second class radiotelegraph operator's certificate may not act as the chief radio officer~~.

(b)

(b) ~~Each cargo ship equipped with a radiotelegraph station in accordance with Part II of Title III of the Communications Act and which has a radiotelegraph auto alarm must carry a radio officer holding a first or second class radiotelegraph operator's certificate who has had at least six months service as a radio officer on board U.S. ships. If the radiotelegraph station does not have an auto alarm, a second radio officer who holds a first or second class radiotelegraph operator's certificate must be carried~~.

(c)

(c) Each cargo ship equipped with a radiotelephone station in accordance with Part II of Title III of the Communications Act must carry a radio operator who meets the following requirements:

(c) (1)

(1) Where the station power does not exceed 1500 watts peak envelope power, the operator must hold a marine radio operator permit or higher class license.

(c) (2)

(2) Where the station power exceeds 1500 watts peak envelope power, the operator must hold a general radiotelephone radio operator license or higher class license.

(d)

(d) Each ship transporting more than six passengers for hire equipped with a radiotelephone station in accordance with Part III of Title III of the Communications Act must carry a radio operator who meets the following requirements:

(d) (1)

(1) Where the station power does not exceed 250 watts carrier power or 1500 watts peak envelope power, the radio operator must hold a marine radio operator permit or higher class license.

(d) (2)

(2) Where the station power exceeds 250 watts carrier power or 1500 watts peak envelope power, the radio operator must hold a general radiotelephone operator license or higher class license.

s 80.161 Operator requirements of the Great Lakes Radio Agreement.

Each ship subject to the Great Lakes Radio Agreement must have on board an officer or member of the crew who holds a marine radio operator permit or higher class license.

s 80.163 Operator requirements of the Bridge-to-Bridge Act.

Each ship subject to the Bridge-to-Bridge Act must have on board a radio operator who holds a restricted radiotelephone operator permit or higher class license.

s 80.165 Operator requirements for voluntary stations.

	Minimum operator license
~~Ship Morse telegraph~~	~~T-2.~~
Ship direct-printing telegraph	MP.
Ship telephone, more than 250 watts carrier power or 1,000 watts peak envelope power.	G.
Ship telephone, not more than 250 watts carrier power or 1,000 watts peak envelope power.	MP.
Ship telephone, not more than 100 watts carrier power or 400 watts peak envelope power:	
Above 30 MHz	None. [FN1]
Below 30 MHz	RP.
Ship earth station	RP.

FN1 RP required for international voyage.

s 80.167 Limitations on operators.

The operator of maritime radio equipment other than ~~T-1, T-2, or G~~ licensees, must not:

(a)

(a) Make equipment adjustments which may affect transmitter operation;

(b)

(b) Operate any transmitter which requires more than the use of simple external switches or manual frequency selection or transmitters whose frequency stability is not maintained by the transmitter itself.

s 80.169 Operators required to adjust transmitters or radar.

(a)

(a) All adjustments of radio transmitters in any radiotelephone station or coincident with the installation, servicing, or maintenance of such equipment which may affect the proper operation of the station, must be performed by or under the immediate supervision and responsibility of a person holding ~~a first or second class radiotelegraph operator's certificate~~ or a general radiotelephone operator license.

(b)

(b) ~~Only persons holding a first or second class radiotelegraph operator certificate must perform such functions at radiotelegraph stations transmitting Morse code~~.

(c)

(c) Only persons holding an operator certificate containing a ship radar endorsement must perform such functions on radar.

s 80.175 Availability of operator licenses.

All operator licenses required by this subpart must be readily available for inspection.

s 80.177 When operator license is not required.

(a)
(a) No radio operator authorization is required to operate:
(a) (1)
(1) A shore radar, a shore radiolocation, maritime support or shore radionavigation station;
(a) (2)
(2) A survival craft station or an emergency position indicating radio beacon;
(a) (3)
(3) A ship radar station if:
(a) (3) (i)
(i) The radar frequency is determined by a nontunable, pulse type magnetron or other fixed tuned device, and
(a) (3) (ii)
(ii) The radar is capable of being operated exclusively by external controls;
(a) (4)
(4) An on board station; or
(a) (5)
(5) A ship station operating in the VHF band on board a ship voluntarily equipped with radio and sailing on a domestic voyage.
(b)
(b) No radio operator license is required to install a VHF transmitter in a ship station if the installation is made by, or under the supervision of, the licensee of the ship station and if modifications to the transmitter other than front panel controls are
not made.
(c)
(c) No operator license is required to operate coast telephone stations or marine utility stations.
(d)
(d) No radio operator license is required to install a radar station on a voluntarily equipped ship when a manual is included with the equipment that provides step-by-step instructions for the installation, calibration, and operation of the radar. The installation must be made by, or under the supervision of, the licensee of that ship station and no modifications or adjustments other than to the front panel controls are to be made to the equipment.

s 80.179 Unattended operation.

The following unattended transmitter operations are authorized:
(a)
(a) EPIRB operations when emergency conditions preclude attendance of the EPIRB transmitter by a person.
(b)

(b) Automatic use of a transmitter during narrow-band direct-printing (NB-DP) operations in accordance with s 80.219.

(c)

(c) Automatic use of a transmitter during selective calling operations in accordance with s 80.225.

(d)

(d) Automatic use of a transmitter when operating as part of the Automated Maritime Telecommunications System (AMTS), an automated multi-station system for which provisions are contained in this part, or an automated public coast station.

(e)

(e) Automatic use of a VHF transmitter to send brief digital communications relating to the condition or safety of vessels while moored when all of the following conditions are met:

(e) (1)

(1) The equipment must be using DSC in accordance with CCIR Recommendations 493 and 541 as modified by this section.

(e) (2)

(2) Sensors must automatically activate the transmitter only under one or more of the following conditions:

(e) (2) (i)

(i) Fire, explosion;

(e) (2) (ii)

(ii) Flooding;

(e) (2) (iii)

(iii) Collision;

(e) (2) (iv)

(iv) Grounding;

(e) (2) (v)

(v) Listing, in danger of capsizing;

(e) (2) (vi)

(vi) Sinking;

(e) (2) (vii)

(vii) Disabled and adrift; and

(e) (2) (viii)

(viii) Undesignated condition related to ship safety.

(e) (3)

(3) The "ROUTINE" DSC category must be used.

(e) (4)

(4) Communications must be selectively addressed to an individual station.

(e) (5)

(5) Transmitter output power must not exceed one watt.

(e) (6)

(6) The call must employ a fixed format and must be in conformity with Recommendation 493 as follows:

Format specifier: Individual call--symbol 120 sent twice.

Address: 9 digit maritime mobile service identity of called station.

Category: Routine--symbol 100.

Self-identification: 9 digit ship station identity.

Message 1: Telecommand symbol 126 sent twice.

Message 2: Telecommand symbol 126 sent 6 times.

End of sequence: Symbol 127.

Error-check character: Check sum.

(e) (7)

(7) Such transmissions are permitted only on channel 70 and the transmitter must be inhibited automatically whenever there is another call in progress on Channel 70.

(e) (8)

(8) The call sequence for any one alarm must not be repeated until after an interval of at least five seconds. Further repetition is permitted only after intervals of at least fifteen minutes each. Repetitions following fifteen- minute waiting intervals must not exceed three.

s 80.201 Scope.

This subpart gives the general technical requirements for the use of frequencies and equipment in the maritime services. These requirements include standards for equipment authorization, frequency tolerance, modulation, emission, power and bandwidth.

s 80.203 Authorization of transmitters for licensing.

(a)

(a) Each transmitter authorized in a station in the maritime services after September 30, 1986, except as indicated in paragraphs (g), (h) and (i) of this section, must be certificated by the Commission for part 80 operations. The procedures for certification are contained in part 2 of this chapter. Transmitters of a model authorized before October 1, 1986 will be considered certificated for use in ship or coast stations as appropriate.

(b)

(b) The external controls, of maritime station transmitters capable of operation in the 156-162 MHz band and manufactured in or imported into the United States after August 1, 1990, or sold or installed after August 1, 1991, must provide for selection of only maritime channels for which the maritime station is authorized. Such transmitters must not be capable of being programmed by station operators using external controls to transmit on channels other than those programmed by the manufacturer, service or maintenance personnel.

(b) (1)

(1) Any manufacturer procedures and special devices for programming must only be made available to service companies employing licensed service and maintenance personnel that meet the requirements of s 80.169(a) and must not be made available with information normally provided to consumers.

(b) (2)

(2) The channels preprogrammed by manufacturers, service and maintenance personnel for selection by the external controls of a maritime station transmitter must be limited to those channels listed in this Part and the duplex channels listed in Appendix 18 of the international Radio Regulations. The

duplex channels listed in Appendix 18 of the international Radio Regulations must be used only in the specified duplex mode. Simplex operations on Appendix 18 duplex channels that are not in accordance with this Part are prohibited.

(b) (3)

(3) Programming of authorized channels must be performed only by a person holding ~~a first or second class radiotelegraph operator's certificate~~ or a general radiotelephone operator's license using any of the following procedures:

(b) (3) (i)

(i) Internal adjustment of the transmitter;

(b) (3) (ii)

(ii) Use of controls normally inaccessible to the station operator;

(b) (3) (iii)

(iii) Use of external devices or equipment modules made available only to service and maintenance personnel through a service company; and

(b) (3) (iv)

(iv) Copying of a channel selection program directly from another transmitter (cloning) using devices and procedures made available only to service and maintenance personnel through a service company.

(b) (4)

(4) VHF maritime radio station transmitters capable of being programmed by station operators by means of external controls that are installed in a maritime station by August 1, 1991, are authorized for use indefinitely at the same maritime station.

(c)

(c) All VHF ship station transmitters that are either manufactured in or imported into the United States, on or after August 1, 1993, or are initially installed on or after August 1, 1994, must be equipped with an automatic timing device that deactivates the transmitter and reverts the transmitter to the receive mode after an uninterrupted transmission period of five minutes, plus or minus 10 per cent. Additionally, such transmitters must have a device that indicates when the automatic timer has deactivated the transmitter. VHF ship station transmitters initially installed before August 1, 1994, are authorized for use indefinitely at the same maritime station. VHF hand-held, portable transmitters are not required to comply with the requirements in paragraph (c) of this section except when used as described in s 80.141.

(d)

(d) Except for radar equipment, applicants for certification of radio equipment designed to satisfy Part II of Title III of the Communications Act or the Safety Convention must also submit with their application a working unit of the type for which certification is desired. Manufacturers of radar equipment intended for installation on voluntarily equipped ships by persons without FCC operators license must include with their equipment authorization application a manual that provides step-by-step procedures for the installation, calibration, and operation of the radar stations.

(e)

(e) ~~Double sideband (DSB) radiotelephone equipment operating in the 1605-27500 kHz band will be authorized only for use in ship stations. Such equipment must comply with Chapter IV of the Safety Convention, operate only on the frequency 2182 kHz, and be marked "Distress and Safety Use Only"~~.

(f)

(f) Transmitters certificated for single sideband suppressed carrier radiotelephone transmissions may be used for facsimile transmissions without filing for a certification modification provided the transmitters retain certification and comply with the applicable standards in this part.

(g)

(g) Manufacturers of ship earth station transmitters intended for use in the INMARSAT space segment must comply with the verification procedures given in Part 2 of this chapter. Such equipment must be verified in accordance with the technical requirements provided by INMARSAT and must be type approved by INMARSAT for use in the INMARSAT space segment. The ship earth station input/output parameters, the data obtained when the equipment is integrated in system configuration and the pertinent method of test procedures that are used for type approval of the station model which are essential for the compatible operation of that station in the INMARSAT space segment must be disclosed by the manufacturer upon request of the FCC or the United States Signatory. Witnessing of the type approval tests and the disclosure of the ship earth station equipment design or any other information of a proprietary nature will be at the discretion of the ship earth station manufacturer. ~~Transmitters of a model that was certificated by MARISAT for use in its system will be considered verified for use in the INMARSAT system. However, the continued use of such equipment will not be permitted after September 1, 1991, unless verified under the Commission's procedures~~.

(h)

(h) In addition to the certification requirements contained in Part 2 of this chapter applicants for certification of 406.025 MHz radiobeacons must also comply with the certification procedures contained in s 80.1061 of this part.

(i)

(i) Certification is not required for U.S. Government furnished transmitters to fulfill a U.S. Government contract. However, such transmitters must comply with all technical requirements in this part.

(j)

(j) Certification is not required for transmitters authorized for developmental stations.

(k)

(k) Certification of individual radio transmitters requested by station applicants or licensees must also follow the certification procedure in paragraph (a) of this section. However, operation of such transmitters must be limited to the specific units individually identified on the station authorization.

(l)

(l) Ship station transmitters may be type accepted for emissions not shown in s 80.205 of this part. However, such emissions are not authorized for use in the United States or for communications with U.S. coast stations.

(m)

(m) Ship station MF, HF, and VHF transmitters may employ external or internal devices to send synthesized voice transmissions for distress and safety purposes on any distress and safety frequency authorized for radiotelephony listed in s 80.369 provided the following requirements are met:

(m) (1)

(1) The technical characteristics of the distress transmissions must comply with this part.

(m) (2)

(2) A transmitter and any internal device capable of transmitting a synthesized voice message must be certificated as an integral unit.

(m) (3)

(3) The synthesized voice distress transmission must begin with the words "this is a recording" and should be comprised of at least:

(m) (3) (i)

(i) the radiotelephone distress call as described in s 80.315(b) and the ship's position as described in s 80.316(c); or

(m) (3) (ii)

(ii) the radiotelephone distress message as described in s 80.316(b). If available, the ship's position should be reported as described in s 80.316(c).

(m) (4)

(4) Such transmission must be initiated manually by an off-switch that is protected from inadvertent activation and must cause the transmitter to switch to an appropriate distress and safety frequency. The radiotelephone distress call and message described in ss 80.203(m)(3)(i) and (ii), respectively, may be repeated. However, the entire transmission including repeats must not exceed 45 seconds from beginning to end. Upon ending the transceiver must return to the receive mode and must not be capable of sending the synthesized distress call for at least thirty seconds. Placing the switch to the off position must stop the distress transmission and permit the transmitter to be used to send and receive standard voice communications.

(m) (5)

(5) Use of the microphone must cause the synthesized voice distress transmission to cease and allow the immediate use of the transmitter for sending and receiving standard voice communications.

(n)

(n) Applications for type acceptance of all marine radio transmitters operating in the 2-27.5 MHz band or the 156-162 MHz band received on or after June 17, 1999, must have a DSC capability in accordance with s 80.225. This requirement does not apply to transmitters used with AMTS or hand-held portable transmitters.

s 80.205 Bandwidths.

(a)

(a) An emission designator shows the necessary bandwidth for each class of emission of a station except that in ship earth stations it shows the occupied or necessary bandwidth, whichever is greater. The following table gives the class of emission and corresponding emission designator and authorized bandwidth:

Class of emission	Emission designator	Authorized bandwidth (kHz)
~~A1A~~	~~160HA1A~~	~~0.4~~
~~A1B [FN1]~~	~~160HA1B~~	~~0.4~~
~~A1D [FN12]~~	~~16K0A1D~~	~~20.0~~
A2A	2K66A2A	2.8
A2B [FN1]	2K66A2B	2.8
A2D [FN12]	16K0A2D	20.0
A3E	6K00A3E	8.0
~~A3N [FN2]~~	~~2K66A3N~~	~~2.8~~
~~A3X [FN3]~~	~~3K20A3X~~	~~25.0~~
F1B [FN4]	280HF1B	0.3
F1B [FN5]	300HF1B	0.5
F1B [FN6]	16KOF1B	20.0
F1C	2K80F1C	3.0
F1D [FN12]	16K0F1D	20.0
F2B [FN6]	16KOF2B	20.0
F2C [FN7]	16KOF2C	20.0

(b) (1)
(1) 5 kHz in the 72.0-73.0 MHz, 75.4-76.0 MHz and 156-162 MHz bands;
(b) (2)
(2) 15 kHz for stations which were authorized for operation before December 1, 1961, in the 73.0-74.6 MHz band.

s 80.207 Classes of emission.

(a)
(a) Authorization to use radiotelephone and radiotelegraph emissions by ship and coast stations includes the use of digital selective calling and selective calling techniques in accordance with s 80.225.
(b)
(b) ~~In radiotelegraphy communications employing a modulated carrier the carrier must be keyed and modulated by an audio frequency~~.
(c)
(c) Authorization to use single sideband emission is limited to emitting a carrier;
(c) (1)
(1) For full carrier transmitters at a power level between 3 and 6 dB below peak envelope power;
(c) (2)
(2) For suppressed carrier transmitters at a power level at least 40 dB below peak envelope power; and
(c) (3)
(3) For reduced or variable level carrier:
(c) (3) (i)
(i) In the 1600-4000 kHz band:
(c) (3) (i) (A)
(A) For coast station transmitters 18+/-2 dB below peak envelope power;
(c) (3) (i) (B)
(B) For ship station transmitters installed before January 2, 1982, 16+/-2 dB below peak envelope power; and
(c) (3) (i) (C)
(C) For ship station transmitters installed after January 1, 1982, 18+/-2 dB below peak envelope power.
(c) (3) (ii)
(ii) In the 4000-27500 kHz band:
(c) (3) (ii) (A)
(A) For coast station transmitters 18+/-2 dB below peak envelope power;
(c) (3) (ii) (B)
(B) For ship station transmitters installed before January 2, 1978, 16+/-2 dB below peak envelope power; and
(c) (3) (ii) (C)
(C) For ship station transmitters installed after January 1, 1978, 18+/-2 dB below peak envelope power.
(d)
(d) The authorized classes of emission are as follows:

Types of stations	Classes of emission
Ship Stations [FN1]	
~~Radiotelegraphy:~~	
~~100-160 kHz~~	~~A1A~~
~~405-525 kHz~~	~~A1A, J2A~~

F2D [FN12]	16K0F2D	20.0
F3C	2K80F3C	3.0
F3C [FN7]	16KOF3C	20.0
F3E [FN8]	16KOF3E	20.0
F3N [FN9]	20MOF3N	20,000.0
G1D [FN12]	16K0G1D	20.0
G2D [FN12]	16K0G2D	20.0
G3D [FN10]	16KOG3D	20.0
G3E [FN8]	16KOG3E	20.0
G3N [FN3], ~~[FN13]~~	16KOG3N	20.0
~~H2A~~	~~1K40H2A~~	~~2.8~~
~~H2B [FN1]~~	~~1K40H2B~~	~~2.8~~
~~H3E [FN11]~~	~~2K80H3E~~	~~3.0~~
~~H3N~~	~~2K66H3N~~	~~2.8~~
J2A	160HJ2A	0.4
J2B [FN4]	280HJ2B	0.3
J2B [FN5]	300HJ2B	0.5
J2B	2K80J2B	3.0
J2C	2K80J2C	3.0
J3C	2K80J3C	3.0
J3E [FN11]	2K80J3E	3.0
J3N	160HJ3N	0.4
NON	NON	0.4
PON	([FN12])	([FN12])
R3E [FN11]	2K80R3E	3.0

FN1 ~~On 500 kHz and~~ 2182 kHz A1B, A2B, H2B and J2B emissions indicate transmission of the auto alarm signals.

~~FN2 Applicable only to tranemissions in the 405-525 kHz band for direction finding.~~

FN3 Applicable only to EPIRB's.

FN4 Radioprinter transmissions for communications with private coast stations.

FN5 NB-DP radiotelegraph and data transmissions for communications with public coast stations.

FN6 Applicable only to radioprinter and data in the 156-162 MHz band and radioprinter in the 216-220 MHz band.

FN7 Applicable only to facsimile in the 156-162 MHz and 216-220 MHz bands.

FN8 Applicable only when maximum frequency deviation is 5 kHz. See also paragraph (b) of this section.

FN9 Applicable only to marine hand-held radar.

FN10 Applicable only to on-board frequencies for maneuvering or navigation.

FN11 Transmitters approved prior to December 31, 1969, for emission H3E, J3E and R3E and an authorized bandwidth of 3.5 kHz may continue to be operated. These transmitters will not be authorized in new installations.

FN12 Applicable to radiolocation and associated telecommand ship stations operating on 154.585 MHz, 159.480 MHz, 160.725 MHz. 160.785 MHz, 454.000 MHz, and 459.000 MHz; emergency position indicating radiobeacons operating in the 406.000-406.1000 MHz frequency bank; and data transmissions in the 156-162 MHz band.

~~FN13 Class C EPIRB stations may not be used after February 1, 1999.~~

(b)

(b) For land stations the maximum authorized frequency deviation for F3E or G3E emission is as follows:

1605-27500 kHz:
~~Manual ..... A1A, J2A~~
DSC F1B, J2B
NB-DP [FN14] F1B, J2B
Facsimile F1C, F3C, J2C, J3C
156-162 MHz [FN2] F1B, F2B, F2C, F3C, F1D, F2D
DSC G2B
216-220 MHz [FN3] F1B, F2B, F2C, F3C
1626.5-1646.5 MHz ..... ([FN4])
Radiotelephony:
1605-27500 kHz [FN5] H3E, J3E, R3E

27.5-470 MHz [FN6] G3D, G3E
1626.5-1646.5 MHz ..... ([FN4])
Radiodetermination:
285-325 kHz [FN7] A1A, A2A
~~405-525 kHz (Direction Finding) [FN8]..... A3N, H3N, J3N, NON~~
154-459 MHz: [FN12] A1D, A2D, F1D, F2D, G1D, G2D
2.4-9.5 GHz ..... PON
14.00-14.05 GHz F3N

Land Stations [FN1]

Radiotelegraphy:
~~100-160 kHz ..... A1A~~
~~405-525 kHz ..... A1A, J2A~~
1605-2850 kHz:
Manual ..... ~~A1A~~, J2A
Facsimile F1C, F3C, J2C, J3C
Alaska--Fixed ..... ~~A1A~~, J2A
4000-27500 kHz:
Manual ..... ~~A1A~~, J2A
DSC F1B, J2B
NB-DP [FN14] F1B, J2B
Facsimile F1C, F3C, J2C, J3C
Alaska--Fixed ..... ~~A1A, A2A~~, F1B, F2B
72-76 MHz ..... ~~A1A, A2A~~, F1B, F2B
156-162 MHz [FN2] F1B, F2B, F2C, F3C, F1D, F2D
DSC G2B
216-220 MHz [FN3] F1B, F2B, F2C, F3C
Radiotelephony:
1605-27500 kHz ..... ~~H3E~~, J3E, ~~R3E~~
72-76 MHz A3E, F3E, G3E
156-470 MHz G3E
Radiodetermination:
2.4-9.6 GHz ..... PON
Distress, Urgency and Safety: [FN8], [FN9]
~~500 kHz [FN10] ..... A2A and A2B or H2A and H2B~~
2182 kHz [FN10], [FN11] ..... A2B, A3B, ~~H2B, H3E~~, J2B, and J3E
~~8364 kHz ..... A2A, H2A~~
121.500 MHz ..... A3E, A3X, NON
123.100 MHz A3E
156.750 and 156.800 MHz [FN13] G3E, G3N
243.000 MHz ..... A3E, A3X, NON
406.025 MHz G1D

FN1 Excludes distress, EPIRBs, survival craft, and automatic link

establishment.
FN2 Frequencies used for public correspondence and in Alaska 156.425 MHz. See ss 80.371(c), 80.373(f) and 80.385(b). Transmitters type accepted before January 1, 1994, for G3E emissions will be authorized indefinitely for F2C, F3C, F1D and F2D emissions. Transmitters approved on or after January 1, 1994, will be authorized for F2C, F3C, F1D or F2D emissions only if they are approved specifically for each emission designator.
FN3 Frequencies used in the Automated Maritime Telecommunications System (AMTS). See s 80.385(b).
FN4 Types of emission are determined by the INMARSAT Organization.
FN5 Transmitters approved prior to December 31, 1969, for emission H3E, J3E, and R3E and an authorized bandwidth of 3.5 kHz may continue to be operated. These transmitters will not be authorized in new installations.
FN6 G3D emission must be used only by one-board stations for maneuvering or navigation.
FN7 Frequencies used for cable repair operations. See s 80.375(b).
FN8 For direction finding requirements see s 80.375.
FN9 Includes distress emissions used by ship, coast, EPIRB's and survival craft stations.
FN10 ~~On 500 kHz and~~ 2182 kHz ~~A1B~~, ~~A2B~~, ~~H2B~~ and J2B emissions indicate transmission of the auto alarm signals.
FN11 Ships on domestic voyages must use J3E emission only.
FN12 For frequencies 154.585 MHz, 159.480 MHz, 160.725 MHz, 160.785 MHz, 454.000 MHz and 459.000 MHz, authorized for offshore radiolocation and related telecommand operations.
~~FN13 Class C EPIRB stations may not be used after February 1, 1999.~~
FN14 NB-DP operations which are not in accordance with CCIR Recommendation 625 or 476 are permitted to utilize any modulation, so long as emissions are within the limits set forth in s 80.211(f).

s 80.209 Transmitter frequency tolerances.

(a)
(a) The frequency tolerance requirements applicable to transmitters in the maritime services are shown in the following table.
Tolerances are given as parts in 10 super6 unless shown in Hz.

Frequency bands and categories of stations	Tolerances [FN1]
(1) Band 100-525 kHz:	
(i) Coast stations:	
For single sideband emissions	20 Hz.
For transmitters with narrow-band direct printing and data emissions	10 Hz. [FN2]
For transmitters with digital selective calling emissions	10 Hz.
For all other emissions	100
(ii) Ship stations:	
For transmitters with single sideband emissions approved before November 30, 1977	20 Hz.
~~For transmitters with other emissions approved before November 30, 1977~~	~~1000. [FN5]~~
For transmitters with narrow-band direct printing and data emissions	10 Hz. [FN2]
For transmitters with digital selective calling	

emissions ..... 10 Hz. ~~[FN3]~~

For all other transmitters approved after November 29, 1977 ..... 20 Hz.

(iii) Ship stations for emergency only:

~~For transmitters approved before November 30, 1977 ..... 3000. [FN5]~~

For all transmitters approved after November 29, 1977 ..... 20 Hz.

(iv) Survival craft stations:

~~For transmitters approved before November 30, 1977 ..... 5000. [FN5]~~

For transmitters ~~approved after November 29, 1977~~ 20 Hz.

(v) Radiodetermination stations:

For all emissions ..... 100.

(2) Band 1600-4000 kHz:

(i) Coast Stations and Alaska fixed stations:

For single sideband and facsimile ..... 20 Hz.

For narrow-band direct-printing and data emissions ..... 10 Hz. ~~[FN2]~~ FN2

For digital selective calling emissions ..... 10 Hz.

For all other emissions ..... 50.

(ii) Ship stations:

For transmitters with narrow-band direct printing and data emissions ..... 10 Hz. [FN2]

For transmitters with digital selective calling emissions ..... 10 Hz. ~~[FN3]~~

For all other transmitters ..... 20 Hz.

(iii) Survival craft stations: ..... 20 Hz.

(iv) Radiodetermination stations:

With power 200W or less ..... 20.

With power above 200W ..... 10.

(3) Band 4000-27500 kHz:

(i) Coast stations and Alaska fixed stations:

For single sideband and facsimile emissions ..... 20 Hz.

For narrow-band direct printing and data emissions ..... 10 Hz. [FN2]

For digital selective calling emissions ..... 10 Hz.

For Morse telegraphy emissions ..... 10.

For all other emissions ..... 15.

(ii) Ship stations:

For transmitters with narrow-band direct printing and data emissions ..... 10 Hz. [FN2]

For transmitters with digital selective calling emissions ..... 10 Hz. ~~[FN3]~~

For all other transmitters ..... 20 Hz.

(iii) Survival craft stations: ..... 50 Hz.

(4) Band 72-76 MHz:

(i) Fixed stations:

Operating in the 72.0-73.0 and 75.4-76.0 MHz bands ..... 5.

Operating in the 73.0-74.6 MHz band ..... 50.

(5) Band 156-162 MHz:

(i) Coast stations:

For stations licensed to operate with a carrier power:

Below 3 watts ..... 10.

3 to 100 watts ..... [FN7] 5.

(ii)	Ship stations	10. [FN4]
(iii)	Survival craft stations operating on 121.500 MHz	50.
(iv)	EPIRBs:	
	Operating on 121.500 and 243.000 MHz	50.
	Operating on 156.750 and 156.800 MHz [FN6]	10.
(6)	Band 216-220 MHz	
(i)	Coast Stations:	
	For all emissions	5.
(ii)	Ship stations:	
	For all emissions	5.
(7)	Band 400-466 MHz:	
(i)	EPIRBs operating on 406.025 MHz	5.
(ii)	On-board stations	5.
(iii)	Radiolocation and telecommand stations	5.
(8)	Band 1626.5-1646.5 MHz:	
(i)	Ship earth stations	5.

FN1 Transmitters authorized prior to January 2, 1990, with frequency tolerances equal to or better than those required after this date will continue to be authorized in the maritime services provided they retain approval and comply with the applicable standards in this part.

FN2 The frequency tolerance for narrow-band direct printing and data transmitters installed before January 2, 1992, is 15 Hz for coast stations and 20 Hz for ship stations. The frequency tolerance for narrow-band direct printing and data transmitters approved or installed after January 1, 1992, is 10 Hz.

~~FN3 Until February 2, 1999, the frequency tolerance for DSC ship station transmitters in the MF and HF bands that were installed before January 2, 1992, is 20 Hz. The frequency tolerance for DSC ship station transmitters in the MF and HF bands type accepted or installed after January 1, 1992, is 10 Hz. After February 1, 1999, the frequency tolerance for all DSC ship station transmitters in the MF and HF bands (regardless of installation date) is 10 Hz.~~

FN4 For transmitters in the radiolocation and associated telecommand service operating on 154.585 MHz, 159.480 MHz, 160.725 MHz and 160.785 MHz the frequency tolerance is 15 parts in 10 super6 .

~~FN5 This frequency tolerance applies to ship station transmitters until February 1, 1999. Thereafter, the frequency tolerance is 20 Hz.~~

~~FN6 Class C EPIRB stations may not be used after February 1, 1999.~~

FN7 For transmitters operated at private coast stations with antenna heights less than 6 meters (20 feet) above ground and output power of 25 watts or less the frequency tolerance is 10 parts in 10. super6

(b)

(b) When pulse modulation is used in land and ship radar stations operating in the bands above 2.4 GHz the frequency at which maximum emission occurs must be within the authorized bandwidth and must not be closer than 1.5/T MHz to the upper and lower limits of the authorized bandwidth where "T" is the pulse duration in microseconds. In the band 14.00-14.05 GHz the center frequency must not vary more than 10 MHz from 14.025 GHz.

(c)

(c) For stations in the maritime radiodetermination service, other than ship radar stations, the authorized frequency tolerance will be specified on the license when it is not specified in this Part.

s 80.211 Emission limitations.